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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re

INVENTOR: T. Weiss et al.) EXAMINER: B.K. Talbot
)
SERIAL NO.: 10/645,384) ART UNIT: 1762
)
FILING DATE: August 21, 2003) DATE: November 13, 2007
)

FOR: Fully Automated Paste Dispense System for Dispensing Small Dots and Lines

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANTS' REPLY BRIEF

This is responsive to the Answer by the Examiner mailed September 19, 2007 and the supplemental paper mailed October 22, 2007.

Appellants acknowledge that the Examiner has withdrawn the rejections on the basis of Bryning et al. U.S. Patent Publication No. 2001/0009136 and Brooks U.S. Patent No. 6,915,928.

A. Claims 1, 3, 4, 6, 7, 8, 10 and 17

Claims 1, 3, 4, 6, 7, 8, 10 and 17 now stand rejected under 35 USC § 103 as being obvious from only Blette et al. U.S. Patent No. 5,186,982.

The Examiner has apparently withdrawn his earlier position that the step in claim 1 of retracting a punch "until the punch face is substantially coplanar with the orifice member second surface" is merely a matter of design choice. The Examiner now states that Blette 'teaches a retracted (Fig. 1) and depositing position (Fig. 2) and therefore the punch face

would be substantially coplanar with the orifice twice between the retracted and deposited positions, i.e., from the retracted to the deposited and again from the deposited to the retracted." Answer, p.4.

The Examiner's argument is apparently a variation on the old saying that "a broken clock is right twice a day," and is simply not reasonable. Appellants' claim 1 recites "retracting the punch until the punch face is substantially coplanar with the orifice member second surface." (Emphasis added.) Blette's pin 22 does not retract "until" its forward end 44 is coplanar with the lower end of passageway outlet 46 - instead it continues past that point until it reaches the retracted position in Fig. 1, where the pin end 44 is well above the lower end of the passageway outlet, and not at all coplanar therewith.

Appellants' claimed method that includes retracting the punch face to be coplanar with the orifice member second surface permits the orifice and punch tip to be wiped clean of any residual paste and to seal the paste chamber to prevent premature drying of the paste. See, specification, page 9, lines 25-28. There is no suggestion in Blette of either practicing this step or achieving the significant and unexpected advantages achieved by appellants' claimed method. Accordingly, appellants' claimed method as recited in claim 1 would not have been obvious to one of ordinary skill from the cited Blette reference.

B. Claim 2

Claim 2 now stands rejected under 35 USC § 103 as being obvious from only Blette et al. in combination with Bibeault et al. U.S. Patent No. 6,775,879.

Claim 2 adds to the method of claim 1 the step of cleaning the punch face and coplanar orifice member second surface to remove any residual flowable material thereon, after the punch face is retracted to be substantially coplanar with the orifice member second surface.

The Examiner agrees that Blette et al. "fail to teach cleaning the pin to remove residual coating material." Answer, p.5. The Examiner takes the position that the motivation to combine Blette with Bibeault is to "maintain[] a clean pin for controlling the desired proper dispensing material." Answer, p.5. However, Bibeault positions the dispensing needle 26 over a cleaning orifice 70, and then activates an airflow to flow past the end of needle 26 to remove liquid residue. Bibeault does not disclose cleaning a punch face while the punch face is retracted to be substantially coplanar with the orifice member second surface. Therefore, appellants' claim 2 is not obvious from the combination of Blette with Bibeault.

C. Claim 5

Claim 5 now stands rejected under 35 USC § 103 as being obvious only from Blette et al. U.S. Patent No. 5,186,982.

Claim 5, dependent on claim 1 adds the additional limitation of sealing the bore and chamber when the punch face is retracted to be coplanar with the second surface. The Examiner states that Blette's "punch being the same size of the passageway would meet the limit of 'sealing' ." Answer, p.9. Again, Blette does not disclose sealing the bore and chamber by retracting the punch face to be substantially coplanar with the second surface. When Blette's pin is retracted (Fig. 1), the passageway outlet is unsealed.

D. Claim 9

Claim 9 now stands rejected under 35 USC § 103 as being obvious only from Blette et al. U.S. Patent No. 5,186,982.

Claim 9, dependent on claim 1 adds the additional limitation of the deposit of conductive, adhesive paste on a ceramic greensheet. The Examiner in his Answer has not provided any evidence that Blette discloses such limitation.

E. Claim 11

Claim 11 now stands rejected under 35 USC § 103 as being obvious only from Blette et al. U.S. Patent No. 5,186,982.

Claim 11, dependent on claim 1 adds the additional limitation of the repeated depositing of flowable material onto a previously deposited amount of flowable material to create a desired height of flowable material on the workpiece. The Examiner states that Blette "teaches repeating the process (col. 6, lines 20-25)." Answer, p.9. However, this passage from Blette states:

The control system 156 then moves the applicator 110 to another position spaced above a desired location on the circuit board 160, and the aforementioned deposition process is repeated until each desired site on the circuit board 160 receives a dot of solder paste.

Blette, column 6, lines 20-25. This statement actually teaches away from the limitation of claim 11, since it deposits the paste on a different position, rather than on a previously deposited amount of flowable material. Accordingly, it would not be obvious to one of ordinary skill in the art to repeat depositing of flowable material on a previously deposited amount of flowable material to create a desired height of flowable material.

F. Claims 12 and 13

Claims 12 and 13 now stand rejected under 35 USC § 103 as being obvious only from Blette et al. in combination with Banno et al. U.S. Patent No. 6,761,925 or Speakman U.S. Patent No. 6,503,831.

Both claims 12 and 13 specify that the flowable material is a conductive paste and the workpiece is a ceramic greensheet. The examiner in his answer has not identified where in either Banno or Speakman there is a teaching of applying a conductive paste to a ceramic

greensheet. As such, the cited combination cannot render obvious the method of appellants' claims 12 and 13.

G. Claim 14

Claim 14 now stands rejected under 35 USC § 103 as being obvious only from Blette et al. U.S. Patent No. 5,186,982.

Claim 14, dependent on claim 1 adds the additional limitation of repeating the depositing of the flowable material and simultaneously adjusting the spacing of the punch face from the orifice member first surface to adjust the desired amount of flowable material on the punch face. The Examiner takes the position that a "controlling mechanism" is taught in Blette and that Blette teaches "controlling dot volume by varying the time that the pin is above [sic] the reservoir outlet." Answer, p.4. However, varying time does not meet the specific limitation of claim 14, wherein the punch spacing is adjusted, and therefore this would not have been obvious to one of ordinary skill in the art.

H. Claim 15

Claim 15 now stands rejected under 35 USC § 103 as being obvious only from Blette et al. U.S. Patent No. 5,186,982.

Claim 15, dependent on claim 1 adds the additional limitation of adjusting the distance the punch face extends beyond the orifice member second surface to adjust the diameter of the desired amount of flowable material deposited onto the workpiece. Again, while the Examiner takes the position that a "controlling mechanism" is taught in Blette (Answer, p.4), the particular limitation of claim 15 is not disclosed or suggested in Blette.

I. Claim 16

Claim 16 now stands rejected under 35 USC § 103 as being obvious only from Blette et al. U.S. Patent No. 5,186,982.

Claim 16, dependent on claim 1 adds the additional limitation of simultaneously measuring size of the flowable material deposited onto the workpiece and using the size measurement to adjust the distance the punch face extends beyond the orifice member second surface and the size of the desired amount of flowable material deposited onto the workpiece. Again, while the Examiner takes the position that a "controlling mechanism" is taught in Blette (Answer, p.4), the particular limitation of claim 16 is not disclosed or suggested in Blette.

J. Claim 18

Claim 18 now stands rejected under 35 USC § 103 as being obvious only from Blette et al. U.S. Patent No. 5,186,982.

Claim 18, dependent on claim 1 adds the additional limitation of repeatedly moving the punch from a position outside the orifice member bore, where the punch face is spaced from the orifice member first surface, through the orifice member bore to a position where the punch face is substantially coplanar with the orifice member second surface, prior to extending the punch face beyond the orifice member second surface and depositing the desired amount of flowable material onto the workpiece.

The Examiner's answer has not specifically addressed how Blette meets or suggests the limitations of claim 18. To the extent that the Examiner relies on his position with respect to claim 1 that Blette teaches retracting pin 22 to a position where the end 44 is substantially coplanar with the lower end of passageway outlet 46, appellants repeat their previous argument that Blette's pin end 4 moves continuously through the position where it passes the lower end of the passageway outlet. Blette's pin end 44 simply does not move "to a position where the punch face is substantially coplanar with the orifice member second surface" as in claim 18, and therefore appellants' claim cannot be obvious from Blette.

K. Claim 19

Claim 19 now stands rejected under 35 USC § 103 as being obvious only from Blette et al. U.S. Patent No. 5,186,982.

Claim 19, dependent on claim 1 adds the additional limitation of measuring the distance of the workpiece to the orifice member second surface and, using the distance measurement, adjusting the distance the punch face extends beyond the orifice member second surface and the diameter of the desired amount of flowable material deposited onto the workpiece. Again, while the Examiner takes the position that a "controlling mechanism" is taught in Blette (Answer, p.4), the particular limitation of claim 19 is not disclosed or suggested in Blette.

L. Claim 20

Claim 20 now stands rejected under 35 USC § 103 as being obvious from only Blette et al. in combination with Hess et al. U.S. Patent Publication No. 2003/0119193.

Claim 20 includes the step of retracting the punch until the punch face is substantially coplanar with the orifice member second surface. Since Blette does not disclose this step, as described above in connection with claim 1, and since the Examiner has not taken the position that Hess makes up for Blette's deficiencies, the combination of the two cannot render claim 20 obvious.

M. Claim 21

Claim 21 now stands rejected under 35 USC § 103 as being obvious from only Blette et al. in combination with Hess et al. and further in combination with Bibeault et al.

Claim 21 is dependent on claim 20, and recites the same subject matter as contained in claim 2, i.e., after the punch face is substantially coplanar with the orifice member second

surface, further including cleaning the punch face and coplanar orifice member second surface to remove any residual flowable material thereon.

The Examiner's Answer relies on the same reasoning as that given in connection with claim 2 (Answer, p.6), and appellants' again submit that Bibeault does not disclose the cleaning method or punch position as recited in claim 20 for the same reasons given above in connection with claim 2.

N. Claim 22

Claim 22 now stands rejected under 35 USC § 103 as being obvious from only Blette et al. in combination with Hess et al. U.S. Patent Publication No. 2003/0119193.

Claim 22, dependent on claim 20, recites that calibration of size of the dots of conductive paste includes determining rate of change of the size of the dots on the greensheet, determining average size of the dots on the greensheet, and determining difference in size between dots on the greensheet, that the adjustment of parameters for dispensing the conductive paste onto the greensheet is based on one or more of the determinations of rate of change of the size of the dots, average size of the dots and difference in size between smallest and largest dots on the greensheet.

In his Answer, p.5, the Examiner's cites Hess' disclosure of feedback control based on "the size of the droplet dispensed, or another characteristic of the droplet." Hess, para. 0112. Hess does not disclose or suggest any calibration based on dynamic comparison of measurements of a plurality of droplets, such as the determinations of rate of change of the size of the dots, average size of the dots and difference in size between smallest and largest dots on the workpiece surface as recited in claim 22. Since the Examiner fails to explain how Hess' disclosure suggests appellants' specific parameter determinations, the

combination of Blette and Hess cannot render claim 22 obvious to one of ordinary skill in the art.

O. Claim 23

Claim 23 now stands rejected under 35 USC § 103 as being obvious from only Blette et al. in combination with Hess et al. U.S. Patent Publication No. 2003/0119193.

Claim 23, dependent on claim 22, further recites assigning a calibration score based on the determinations of rate of change of the size of the dots, average size of the dots and difference in size between smallest and largest dots on the workpiece surface.

As with claim 22, the Examiner's Answer fails to explain how Hess' disclosure suggests appellants' calibration score based on the specific parameter determinations. Therefore, the combination of Blette and Hess cannot render claim 23 obvious to one of ordinary skill in the art.

CONCLUSION

For the reasons given above and in their main brief, appellants submit that claims 1-23 of the instant application are not obvious from the cited prior art. Reversal of the rejections under 35 USC § 103 is respectfully requested.

Respectfully submitted,



Peter W. Peterson
Reg. No. 31,867

DeLIO & PETERSON, LLC
121 Whitney Avenue
New Haven, CT 06510-1241
(203) 787-0595